

American Academy of Neurology Presentation: “Drip and Ship” for stroke patients receiving rt-PA: the need for a V code

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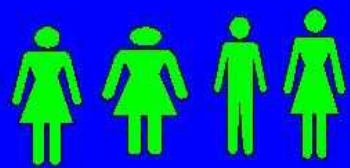
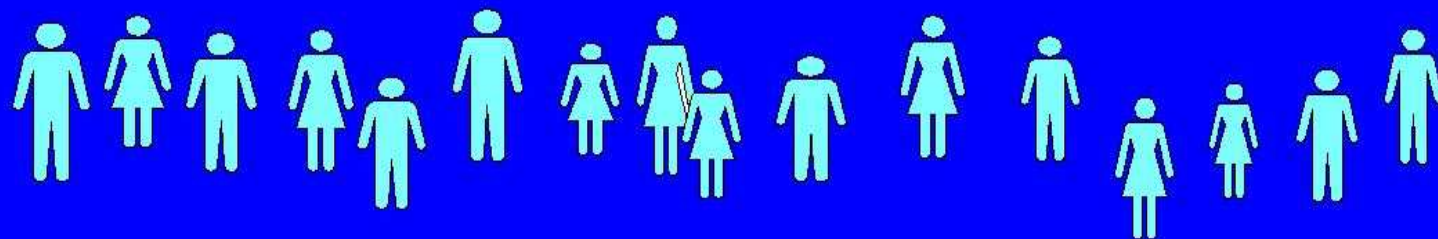
- Background of Acute Stroke Therapy
- Description of Current Issue: Drip and Ship
- Proposed Solutions

Background

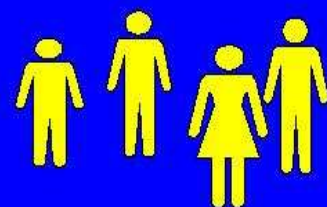
- Stroke occurs in over 780,000 people in the US
- **#3 killer and #1 cause of disability**, costing the healthcare system over \$50 billion annually
- With the growing elderly population, the situation will only worsen
- Approximately 70% of stroke patients are over 65 years of age
- Patients treated in stroke DRGs are the second leading contributor to Medicare post-acute care spending. Medicare spends more on post-acute care for these patients than what it pays for acute inpatient hospital care.

Background

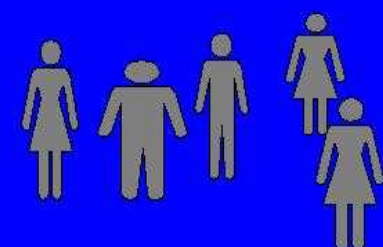
- There is only 1 approved drug for treating an Acute Ischemic Stroke: rt-PA
- Successful administration of rt-PA has been proven to improve long term outcomes and reduces costs to the healthcare system



Minimal/no



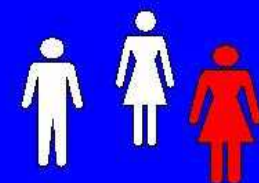
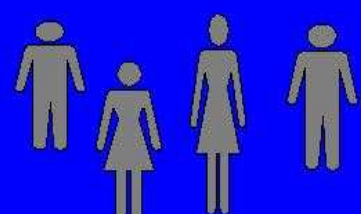
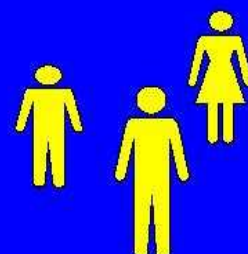
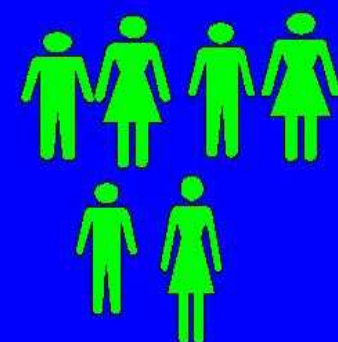
Moderate



Severe



Dead



Cost Effectiveness of rt-PA

- In the original NINDS rt-PA Stroke Trial, the
 - **average length of stay was significantly shorter** in rt-PA-treated patients than in placebo-treated patients (10.9 versus 12.4 days; $p = 0.02$)
 - **More rt-PA patients were discharged to home** than to inpatient rehabilitation or a nursing home (48% versus 36%; $p = 0.002$).
 - Markov model estimate: Per 1000 eligible patients, **4 million dollars saved over their lifetimes**
 - increase in hospitalization costs of \$1.7 million,
 - decrease in rehabilitation costs of \$1.4 million and
 - decrease in nursing home costs of \$4.8 million
 - The estimated impact on long-term health outcomes was 564 (3 to 850) quality-adjusted life-years saved over 30 years of the model per 1,000 patients.

Fagan, S., Morgenstern, L., Petitta, A., Ward, R., Tilley, B., Marler, J., Levine, S., Broderick, J., Kwiatkowski, T., Frankel, M., Brott, T., Walker, M., and NINDS rt-PA Stroke Study Group, *Cost-effectiveness of tissue plasminogen activator for acute ischemic stroke*. Neurology, 1998. **50**: p. 883-890.

What is “drip and ship” and
why is it increasing?

Drip and Ship

- Use of rt-PA in smaller community and rural hospitals is increasing because of support relationships with regional comprehensive stroke centers, similar to trauma models of care
- However, patients still need to be cared for in major stroke centers to optimize recovery

Drip and Ship

- With telephone support and direction from nearby tertiary care “comprehensive stroke center”, community hospital is able to diagnose ischemic stroke and institute rt-PA treatment within 3 hour window.

Drip and Ship

- Because community and rural hospitals may not have resources, including neurology expertise, to care for these complex stroke patients and to monitor rt-PA treatment, patient is emergently transferred to nearby stroke center.

The 'Drip and Ship' Scenario A

Stroke Center hospital gives rt-PA and admits patient

- ER performs history/examination, head CT scan, blood work
- Administers rt-PA in ER
- Admits patient to neurological ICU
- Close monitoring for worsening
 - Blood pressure, neurologic exams by neuro trained staff
- Additional radiology, cardiology testing and bloodwork
- Protocol-driven care to improve outcomes and prevent medical complications (part of stroke center certification), neurosurgical expertise available

Scenario B

Outside ER gives rt-PA (DRIP) then transfers patient to stroke center ER (SHIP)

- Outside ER obtains history/examination, a head CT, blood work
- Calls stroke center physician for treatment recommendations
- Outside ER gives rt-PA after phone consultation with stroke center
- Patient transferred to stroke center ER (often while rt-PA dripping)
- Stroke center ER obtains history/examination, may repeat head CT if needed
- Admits patient to neurological ICU
- Close monitoring for worsening
 - Blood pressure, neurologic exams by neuro trained staff
- Additional radiology, cardiology testing and blood work
- Protocol-driven care to improve outcomes and prevent medical complications (part of stroke center certification), neurosurgical expertise available

Why is stroke different?

Why isn't this as much of a problem for other conditions (eg. acute myocardial infarction)?

- Less stroke-trained neurologists
- ED physicians less comfortable with neurologic problems, esp. rt-PA
 - No definitive test that diagnoses stroke
 - No required training during ED residency, therefore less comfortable with neurologic exam and diagnoses
- Complications after rt-PA more common for stroke than for lytic for other conditions, and are life-threatening
- Monitoring for complications requires specialized stroke care and neurosurgical back-up

How does drip and ship interfere
with tracking of treatment and
quality indicators?

CDC grant for studying stroke

- Currently, Dawn Kleindorfer is the principal investigator of a investigator-initiated grant from the CDC to evaluate trends over time in:
 - Rates of rt-PA use
 - Quality of care indicators for stroke patients

CDC TA#: U36/CCU319276 , CDC contact Henraya McGruder

Rt-PA Use is Increasing

- Using the Premier database, which allows pharmacy cross-referencing, evaluated rt-PA use
- **Rt-PA use increased by 60% over 2 year period!**

	FY2001	FY2002	FY2003	FY2004	FY2005	FY2006
Total number of cases, DRG 14/15/524/559	54,772	59,893	58,570	56,129	54,012	59,334
# with pharmacy billing for thrombolytic (%)*	875 (1.60%)	1002 (1.67%)	956 (1.63%)	1021 (1.82%)	1332 (2.47%)	1781 (3.0%)

**JCAHO Stroke
Centers**

Treatment Rates?

- Without knowing whether the patient was treated at the original hospital, or transferred after treatment, we cannot determine:
 - Treatment rates per hospital
 - Proportion of eligible patients treated
 - Complication rates of treatments given (often attributed to accepting hospital, even though they did not administer it)

Time Targets?

- Many of the established quality indicators for evaluation of acute stroke patients are time-based:
 - Door-to-triage
 - Door-to-head CT
 - Door-to-needle
 - no antithrombotics given for 24 hours after rt-PA
 - 24 hour safety head CT done

Delays in outside hospitals could be assigned to accepting hospital

How often does
“Drip and Ship” occur?

- AAN Survey in Fall of 2007 – 33 Stroke Centers Responded
- 23 indicated substantial number of stroke patients admitted where rt-PA initiated at other hospital

AAN Stroke Center Survey Results

14,625 stroke admissions
at 33 centers



~12,430 ischemic stroke patients



1083 ischemic stroke patients
treated with rt-PA (8.7%)



35% of rt-PA treatments

375 stroke patients treated
with rt-PA and transferred:
“drip and ship”

AAN Survey

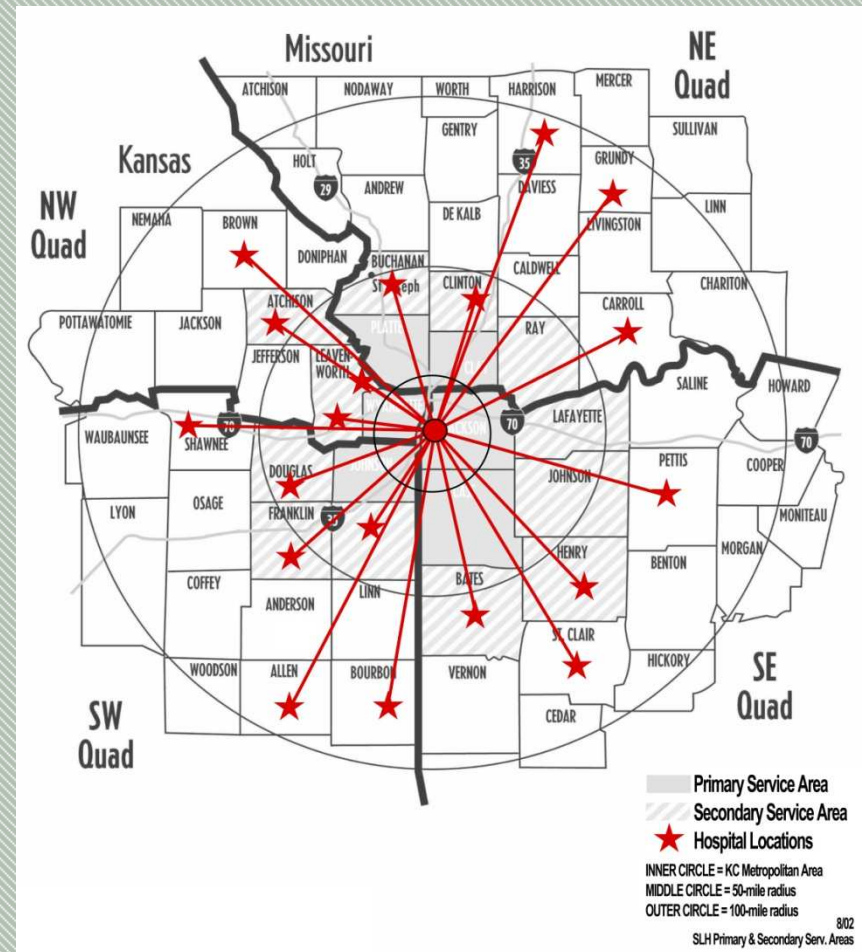
- Some centers reported up to 73% of the rt-PA patients admitted to their hospital were drip and ship
 - 6 centers out of 33 reported >50% were drip and ship

Specific Case Study

The Mid America Brain and Stroke Institute Kansas City, MO

Working as a Regional Network:

70% of their acute
intervention cases
originate in another
regional hospital.

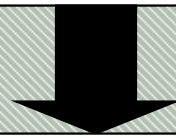


Specific Case Study Con't.

- Cases January 2000 through September 2004
 - Total ischemic strokes = 1694
 - Transferred to them = 268
 - Received IV rt-PA before transfer = 139
- Transferred from 47 different hospitals: 14 in the metro area; 33 within 150 miles.

Current Best Case Scenario

780,000 Stroke Patients in US Per Year



663,000 ischemic stroke patients



19,890 ischemic stroke patients
treated with rt-PA (3%)



6,962 stroke patients treated
with rt-PA and transferred:
"drip and ship"

Lower U.S. rt-PA
treatment rate than
in AAN survey

Proposed Solution: V code

Proposed Solution

Proposed V code definition:

**history of receiving rt-PA for acute
ischemic stroke in another hospital's
emergency department within the last
24 hours**

Why 24 hours?

- Most of the complications after rt-PA occur within the first 24 hours
 - Especially bleeding complications
- Many of the time-based quality indicators are based on the 24-hour period
- Trying to avoid confusion with patients treated at 11pm and transferred at 1am
- Trying to separate from the patient treated 5 days ago with complications belatedly transferred